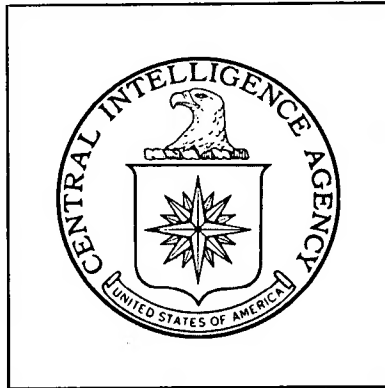


Top Secret



**DIRECTORATE OF
INTELLIGENCE**

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

Selected Oil Fields

China

Top Secret

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RCS 13/0180/60

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DATE JUNE 1969
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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

RCS - 13/0189/69

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INSTALLATION OR ACTIVITY NAME				COUNTRY	
Selected Oil Fields				CH	
UTM COORDINATES	GEOGRAPHIC COORDINATES	BE NUMBER	COMIREX NO.	WAC PIC	NC
NA	See Table	See Table	See Table	See Table	See Table

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MAP REFERENCE

See References

LATEST IMAGERY USED	NEGATION DATE (If required)
See References	Not Required

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<u>Oil Field</u>	<u>Geographic Coordinates</u>	<u>WAC-PIC Number</u>
A. Sa-erh-tu Oil Field	46-32N 125-06E	0283-118
B. Kuang-jao Oil Field	37-30N 118-30E	0381-144A
C. Ko-la-ma-i Oil Field	45-34N 084-53E	None
D. Yu-chuan-tzu Oil Field	38-10N 090-58E	0333-8A
E. Yu-sha-shan Oil Field	38-19N 090-53E	0333-8

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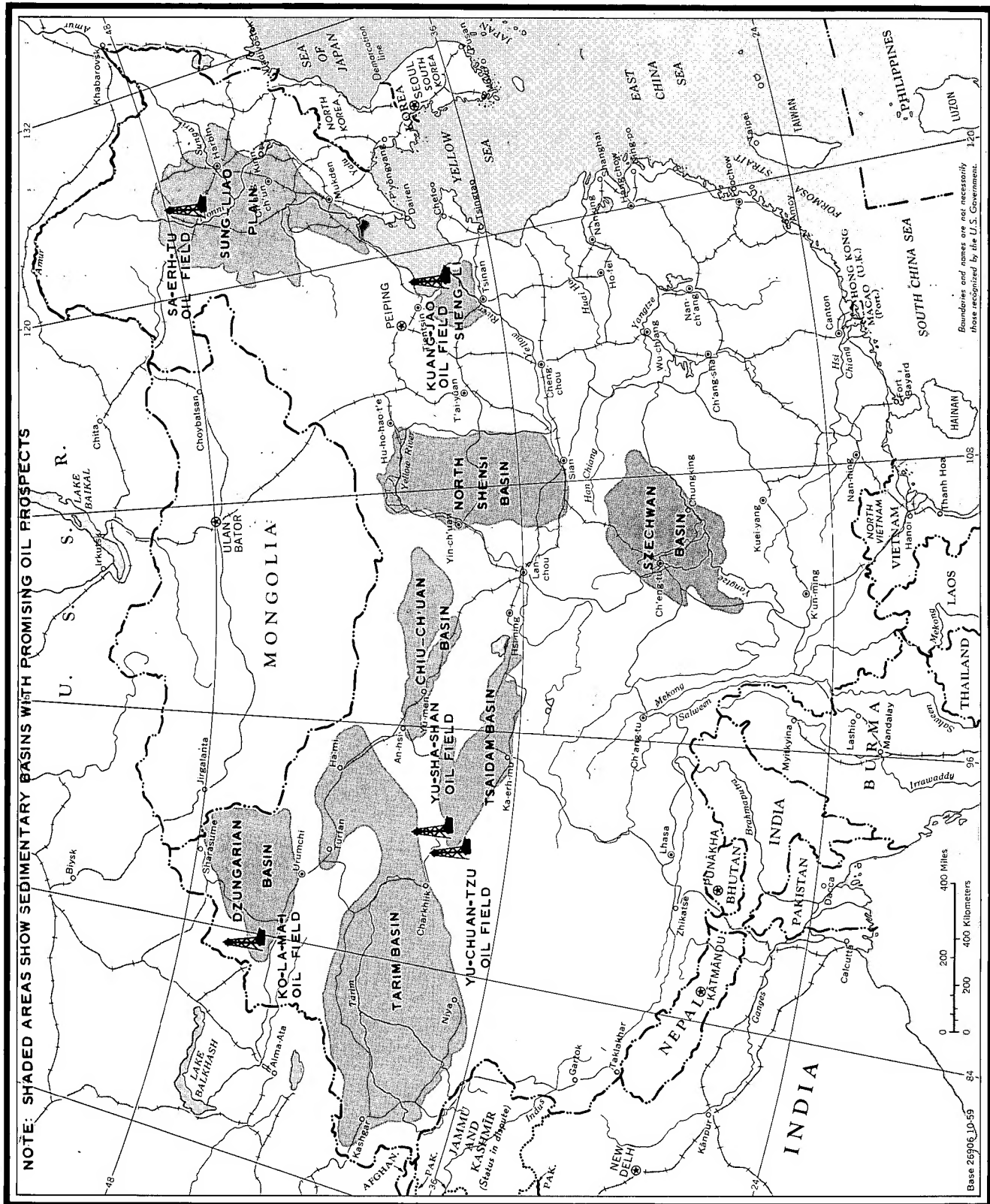


FIGURE 1. LOCATION MAP.

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ABSTRACT

The Sa-erh-tu, Ko-la-ma-i, and Kuang-jao oil fields are the three largest producing fields in China. The Sa-erh-tu field consists of approximately 183,000 acres and 4,600 well sites/oil wells; Ko-la-ma-i approximately 95,000 acres and 2,050 well sites/oil wells; and Kuang-jao approximately 31,000 acres and 720 well sites/oil wells. The fields were discovered in the late 1950's-early 1960's, but the greatest development did not occur until the 1966 to 1968 period. They appear to have been systematically developed with well spacing on a regular pattern, which is a conservation practice used to exploit a field to its fullest capacity. Exploratory drilling locations observed in these fields suggest that the fields will be expanded in the future.

The Yu-chuan-tzu field consists of approximately 512 acres with at least 32 well sites/oil wells, and the Yu-sha-shan field consists of about 74 acres containing an undetermined number of well sites/oil wells. These two fields were first studied on photography of 1961 and remained relatively undeveloped through November 1968 with only minor expansion at Yu-sha-shan between 1966 and 1968.

This report includes an annotated photograph, mensuration of significant features, a chronology of expansion, and the current status of each field.

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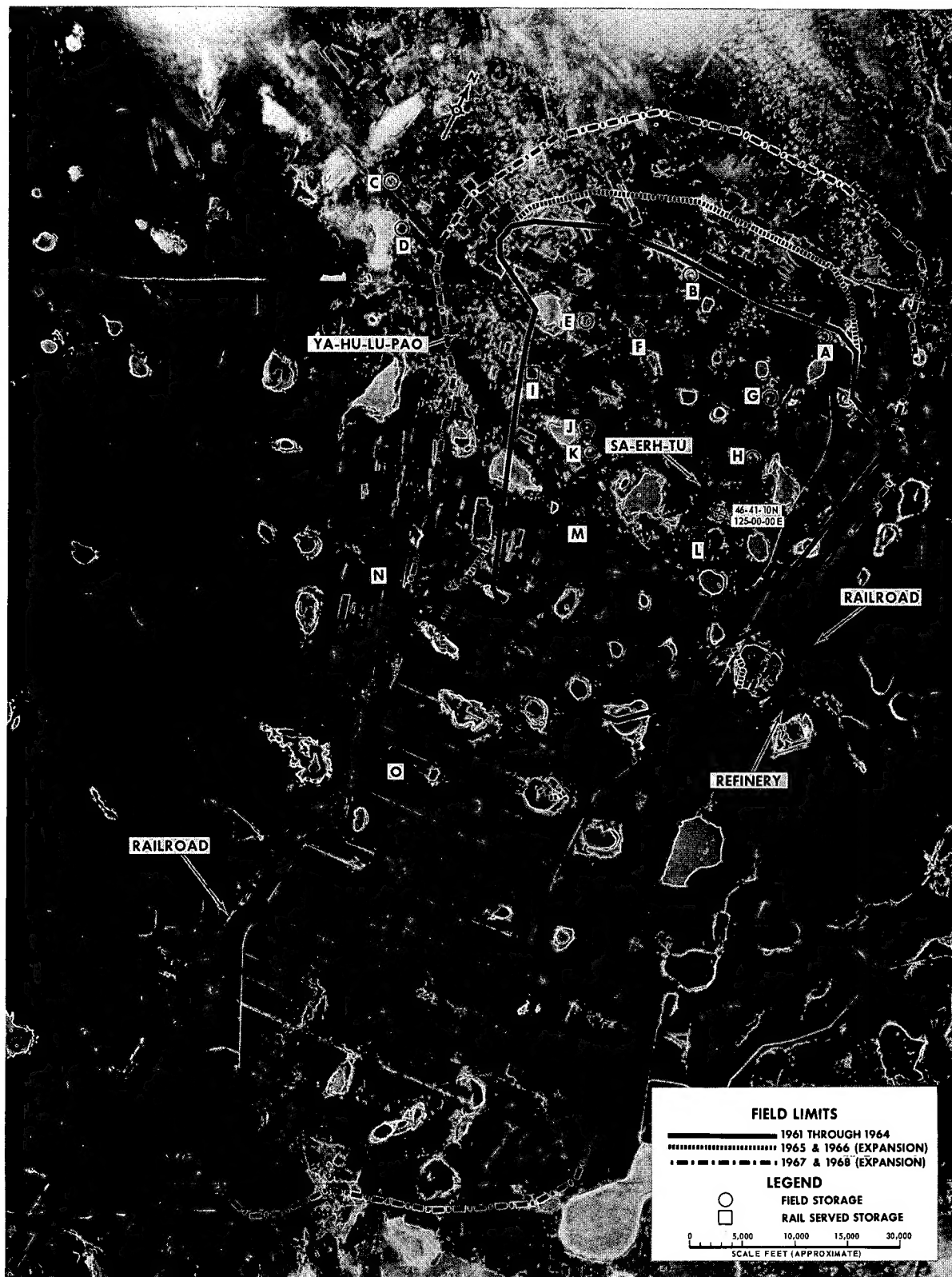
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FIGURE 2. SA-ERH-TU OIL FIELD, CHINA

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SA-ERH-TU OIL FIELD

INTRODUCTION

The Sa-erh-tu Oil Field surrounds the town of Sa-erh-tu on the Sung-liao Plain in Heilungkiang Province. The field is served by spurs from the Ha-erh-pin to Chi-chi-ha-erh rail line. No major roads enter the area, but the field has an internal road network.

The Sa-erh-tu Petroleum Refinery and Storage [] a thermal power plant, a possible oil processing plant, and a possible petrochemical plant are associated with the operation. A portion of the crude oil extracted is refined at the Sa-erh-tu petroleum refinery, and the excess is shipped by rail to refinery facilities in eastern China.

BASIC DESCRIPTION

Physical Features

The oil field measures approximately 28 by 10 nm along a major north-south axis and contains approximately 183,000 acres. Approximately 4,600 well sites/oil wells and 22 exploratory drilling rigs were identified on photography []. The field was developed utilizing a 40-acre well spacing pattern. A total of 103 storage tanks are located in the field, at the associated plants, and the rail loading facilities (see Table I).

Chronology

When first observed on photography of [] the field consisted of approximately 780 well sites/oil wells located on about 32,000 acres. It developed slowly between 1961 and 1966 with an average of 250 well sites/oil wells being added per year. The rate increased to 1,300 new well sites/oil wells per year between []. The field gathering system and its associated storage tanks have been continually expanded with the development of the field.

TABLE I

STORAGE FACILITIES

SA-ERH-TU OIL FIELD, CHINA

AREA	Number of Tanks	Diameter* (feet)	Function of Tanks	Location	
A	4	25	Gathering	Oil Field	25X1
B	4	25	Gathering	Oil Field	
C	3	40	Crude Storage	Possible Petrochemical Plant	
	7	25	Intermediate/		
	6	15	Product Storage		
D	2	65	Product Storage	Oil Field	
	1	25	Gathering		
E	4	25	Gathering	Oil Field	
	2	45			
F	4	25	Gathering	Oil Field	
	3	20			
G	8	25	Gathering	Oil Field	25X1
H	3	25	Gathering	Oil Field	
I	12	65	Crude Storage	Rail Terminal	
	6	20			
J	3	15	Gathering	Oil Field	
K	6	25	Gathering	Oil Field	
L	2	90	Crude Storage	Possible Oil Processing Plant	25X1
	4	75	Intermediate/		
			Product Storage		
M	2	55	Product Storage		
	4	25	Gathering	Oil Field	25X1
N	5	95	Crude Storage	Rail Facility	
O	8	110	Crude Storage	Rail Facility	

*All measurements in the table have been rounded off to the nearest 5 feet.

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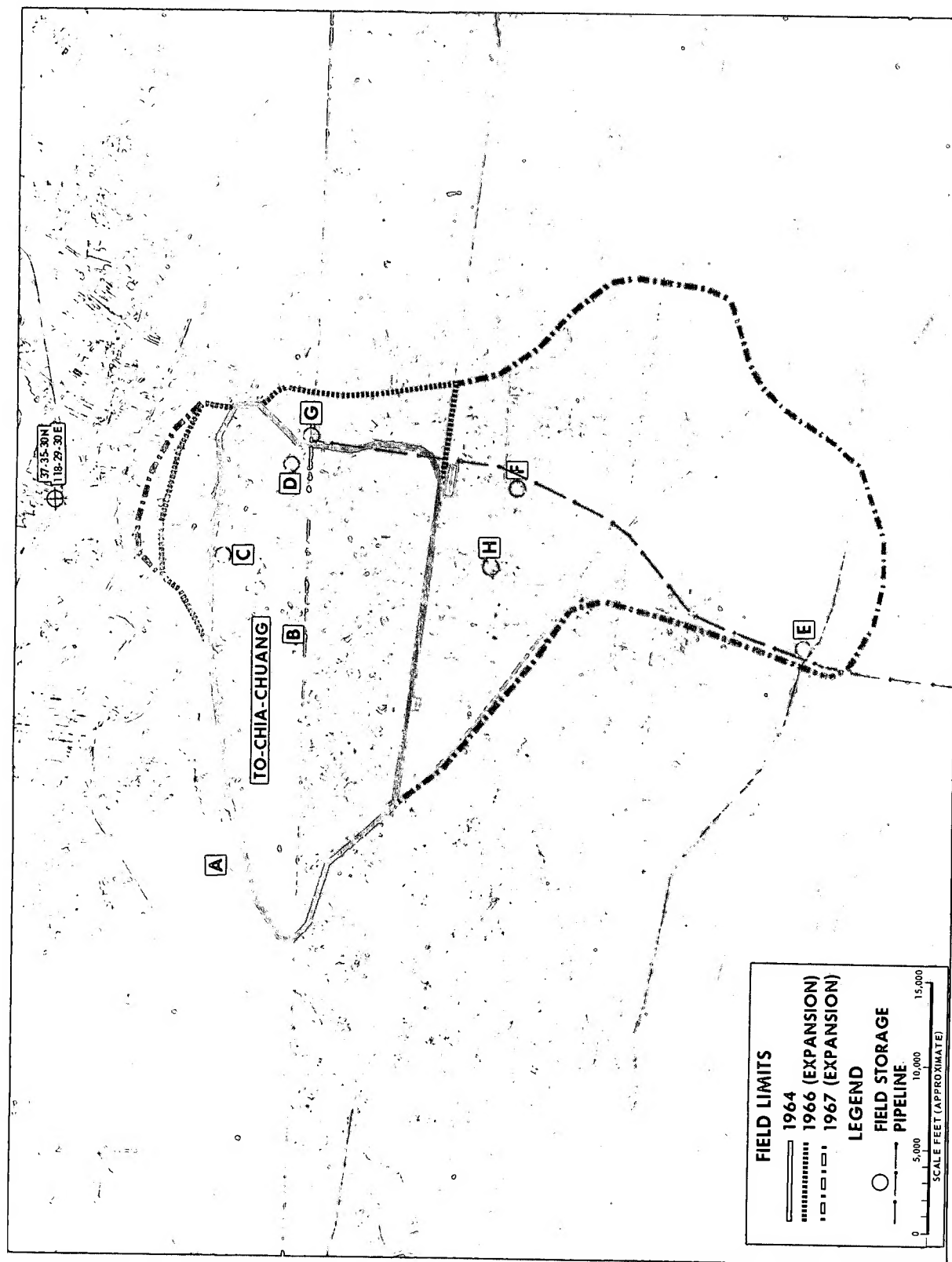


FIGURE 3. KUANG-JAO OIL FIELD, CHINA,

25X1

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25X1

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KUANG-JAO OIL FIELD

INTRODUCTION

The Kuang-jao Oil Field surrounds the town of To-chia-chuang on the northeastern edge of the Sheng-li Basin in Shantung Province. No major roads or rail lines serve the area; however, the field has an internal road network. The crude oil is piped from the field to a pipeline terminal at Yung-liu-chuang (36-48N 118-13E), a distance of 54 nm. From there it is shipped by rail to Ching-tao, where it is transloaded to tankers for shipment to the Nan-ching Petroleum Refinery.

BASIC DESCRIPTION

Physical Features

The oil field measures approximately 8 by 8 nm and contains approximately 31,000 acres. Approximately 720 well sites/oil wells and 12 exploratory drilling rigs were identified on photography of . The field was developed utilizing a 40-acre well spacing pattern. A total of 43 storage tanks are located in the field (see Table II).

Chronology

When first observed on photography of the field consisted of about 11,000 acres. At that time only preliminary work, such as surveying and construction of gathering tanks, was under way. Exploratory wells were probably being drilled at that time, but could not be discerned on the small-scale photography. The field developed slowly between 1965 and 1966, increasing to about 14,000 acres with the number of well sites/oil wells increasing from 19 to 49 locations. Between 1966 and 1967 the field expanded to 193 locations and doubled in area. By September 1968 the well spacing pattern had changed from 60 to 40 acres per site, resulting in an increased number of wells. Approximately 720 well sites/oil wells were identifiable in the approximate 31,000 acre area.

TABLE II

FIELD STORAGE FACILITIES
KUANG-JAO OIL FIELD, CHINA

Area	Number of Tanks	Diameter (feet)*	Function of Tanks	Remarks
A	4	30	Gathering	
	2	20		
B	4	30	Gathering	
	1	45		
C	2	40	Gathering	25X1
	2	30		
D	4	20	Gathering	
E	6	85	Gathering	Semiburied
F	6	20	Gathering	
G	4	45	Gathering	Semiburied
H	4	30	Gathering	
	1	65		
	3	20		25X1

*All measurements in the table have been rounded off to the nearest 5 feet.

25X1

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25X1

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25X1
ZSAI

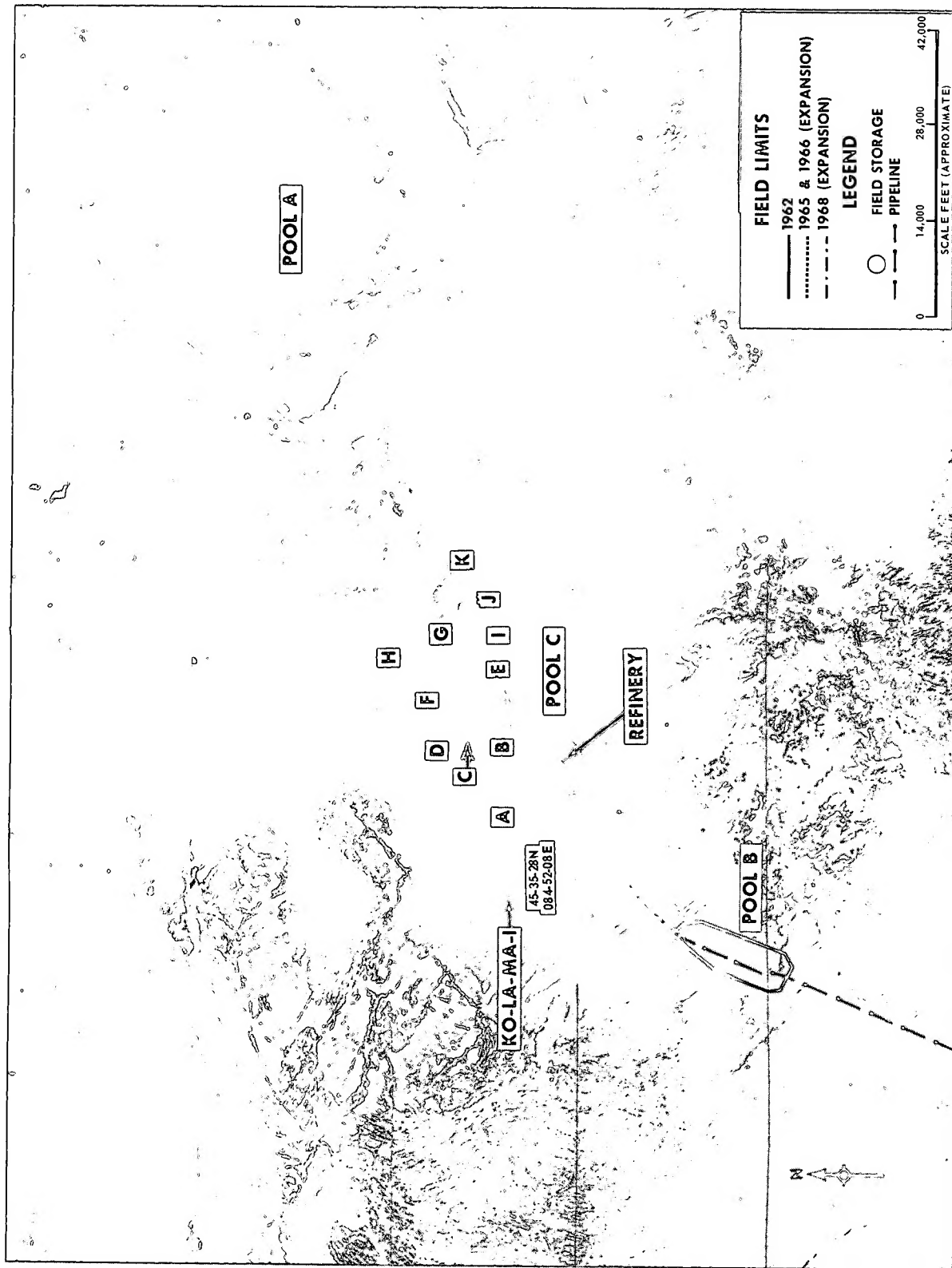


FIGURE 4. KO-LA-MA-I OIL FIELD, CHINA.

25X1

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25X1

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25X1

KO-LA-MA-I OIL FIELD

INTRODUCTION

The Ko-la-ma-i Oil Field is located in the vicinity of Ko-la-ma-i on the northwestern edge of the Dzungarian Basin in Sinkiang Uighur Autonomous Region. The Ko-la-ma-i Airfield [] and the Ko-la-ma-i Petroleum Refinery [] are respectively located west and south of the oil field center. No rail facilities service this area, but a well maintained, all-weather road connects Ko-la-ma-i with Tu-shan-tzu to the south. A portion of the crude oil extracted is processed at the Ko-la-ma-i Petroleum Refinery and the excess is shipped via pipeline to the Tu-shan-tzu Petroleum Refinery []. Here it is transloaded and carried by rail to the Lan-chou Petroleum Refinery [].

BASIC DESCRIPTION

Physical Features

The oil field is elongated in a northeast/southwest direction. Three pools could be identified within the field on photography of []. Pool A, the northernmost, is generally circular in plan with a diameter of approximately 11 nm. It contains about 51,000 acres and 32 randomly spaced well sites/oil wells. Pool B, the southernmost, measures approximately 6 by 1 nm. It contains about 4,550 acres and 21 randomly spaced well sites/oil wells. Pool C, in the center, is crescent shaped with a 17 nm long axis and a 4 nm maximum width. It contains approximately 40,000 acres, 1,995 well sites/oil wells, and five exploratory drilling locations. It was developed utilizing a 20-acre well spacing pattern. A "central jack" pumping system was identified at this pool. This type of system is usually associated with shallow production in the United States. A total of 66 storage tanks are located in the field (see Table III).

Chronology

When first observed on photography of 30 May 1962, the field consisted of about 47,000 acres in Pool A, 4,550 acres in Pool B, and 14,000 acres in Pool C. Only minor development in Pools A and B was noted from 1962 through 1968. However, Pool C developed rapidly, doubling in size between 1962 and 1965, and increasing to three times its original size by 1968. Since May 1962, the date of the earliest good-quality photography over the area, the average rate of expansion in Pool C has been 200 well sites/oil wells per year.

TABLE III

FIELD STORAGE FACILITIES
KO-LA-MA-I OIL FIELD, CHINA

Area	Number of Tanks	Diameter (feet)*	Function of Tanks	Remarks
A	4	45	Storage	Semiburied 25X1
B	3	60		25X1
C	8	30	Gathering	
	4	60	Gathering	1 U/C
D	1	30		
E	3	60	Gathering	25X1
	6	30	Gathering	
	14	125 x 125	Storage	Semiburied 25X1
				Reservoirs
F	2	60	Gathering	
G	3	30	Gathering	
H	3	60	Storage	
	2			Semiburied 25X1
				Reservoirs
I	4	30	Gathering	25X1
J	6	30	Storage	25X1
K	3	60	Storage	

*All measurements have been rounded off to the nearest 5 feet.

25X1

-9-
TOP SECRET RUFF

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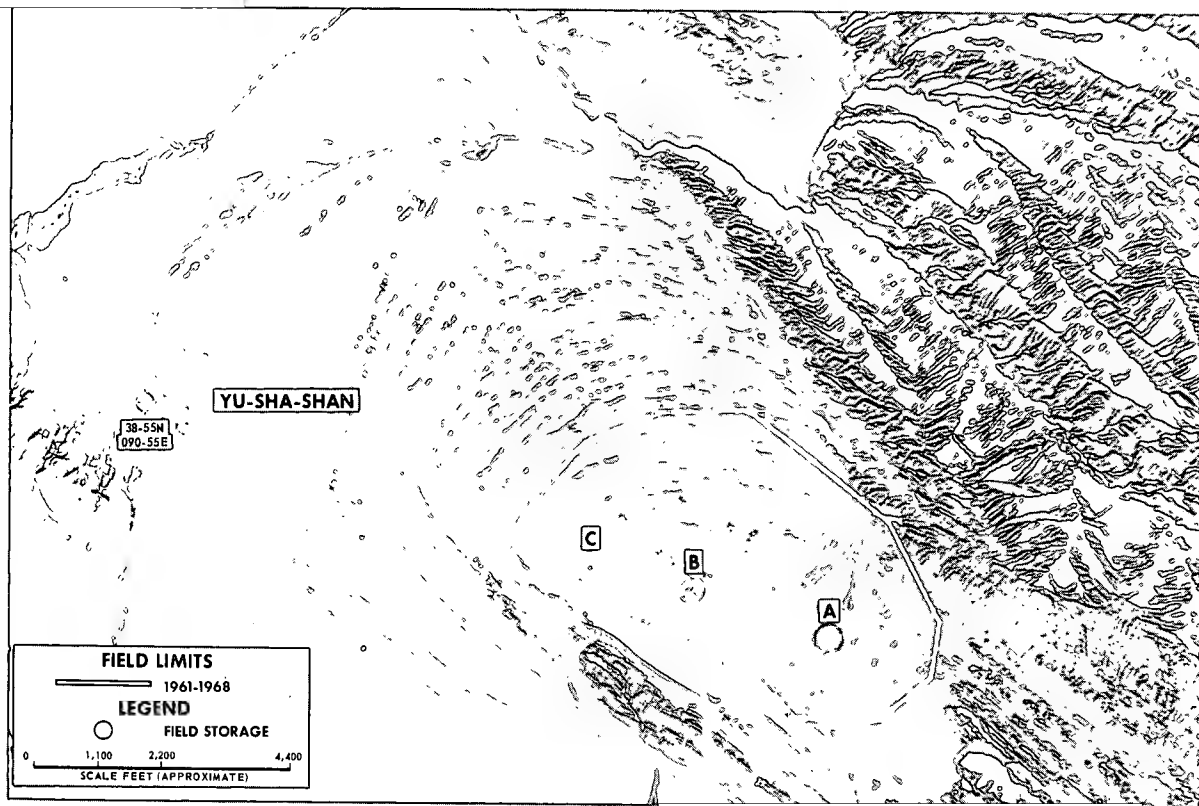
25X1
25X1

FIGURE 5. YU-CHUAN-TZU OIL FIELD, CHINA,

25X1

TABLE IV

FIELD STORAGE FACILITIES
YU-CHUAN-TZU OIL FIELD, CHINA

Area	Number of Reservoirs	Dimensions*		Function of Reservoirs
		Length	Width	
A	3	60	40	Gathering
B	6	60	40	Gathering
C	2	60	40	Gathering

*All measurements in the table have been rounded off to the nearest 5 feet.

TOP SECRET RUFF

25X1

TOP SECRET RUFF

25X1

YU-CHUAN-TZU OIL FIELD

INTRODUCTION

The Yu-chuan-tzu Oil Field is located approximately 1.5 nm east-southeast of the town of Yu-sha-shan on the western edge of the Tsaidam Basin in Tsinghai Province. A railroad has not been built into the area, but a well maintained road goes from Yu-sha-shan to Hung-ang-chuan. The crude oil from this field is probably shipped by truck to the Pai-yang-ho Petroleum Refinery, Yu-men [] and then by rail to the Lan-chou Petroleum Refinery [].

25X1

25X1

BASIC DESCRIPTION

Physical Features

The oil field measures approximately 1.4 by 0.6 nm along a southeast/northwest axis and contains approximately 512 acres. At least 32 well sites/oil wells were identified on photography of []. These well sites/oil wells tend to reflect a 20-acre well spacing pattern. A total of 11 storage reservoirs are located at the field (see Table IV).

25X1

Chronology

The field was first observed on photography of [] and no expansion was observed on subsequent coverage through November 1968.

25X1

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25X11

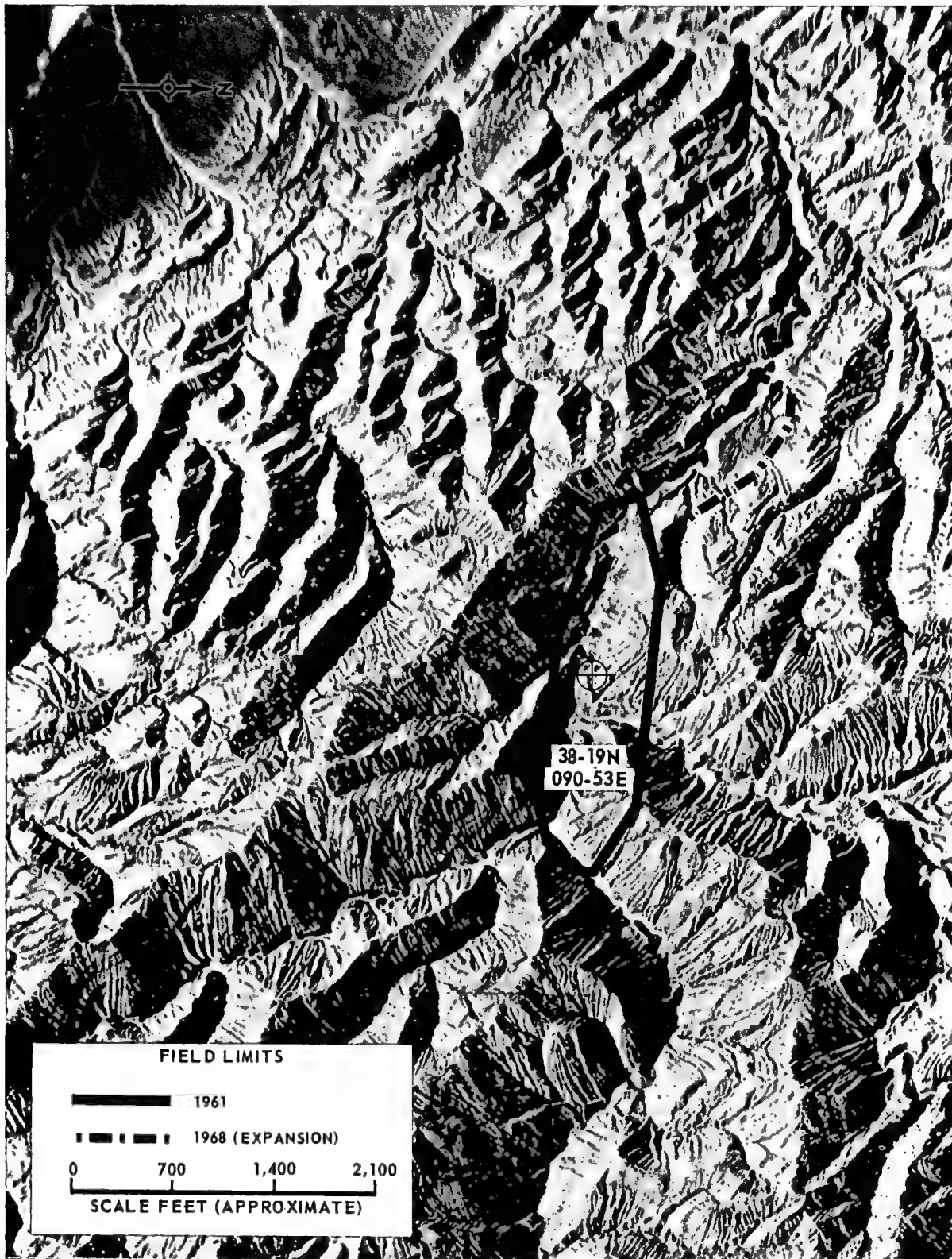


FIGURE 6. YU-SHA-SHAN OIL FIELD, CHINA,

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YU-SHA-SHAN OIL FIELD

INTRODUCTION

The Yu-sha-shan Oil Field is located approximately 3 nm north of the town of Yu-sha-shan on the western edge of the Tsaidam Basin in Tsinghai Province. A railroad has not been built into the area, but the field is served by a trail off the road between Yu-sha-shan and Hung-ang-chuan. The crude oil from this field is probably shipped by truck to the Pai-yang-ho Petroleum Refinery, Yu-men [redacted] and then by rail to the Lan-chou Petroleum Refinery [redacted]

25X1
25X1

BASIC DESCRIPTION

Physical Features

The oil field measures approximately 0.7 by 0.2 nm along a west-northwest/east-southeast axis and contains approximately 74 acres. An undetermined number of well sites/oil wells existed in the field on photography of [redacted] Because of the rugged topography and small scale of available photography, it is not possible to give a more detailed analysis of the facilities and equipment here.

25X1

Chronology

The field was first observed on photography of [redacted] and subsequent coverage through February 1966 revealed no evidence of expansion. Between February 1966 and November 1968, the field had expanded from 52 to 74 acres.

25X1

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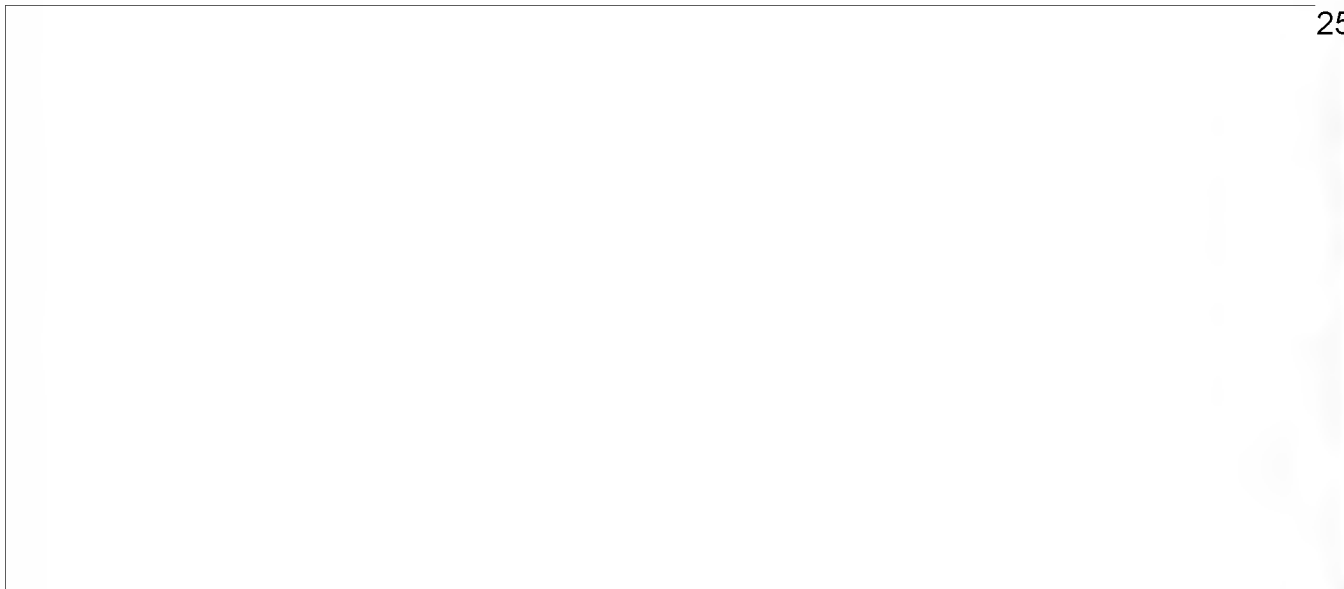
25X1

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25X1

REFERENCES

A. Sa-erh-tu Oil Field



25X1

Map

2nd RTS. US Air Target Chart, Series 200, Sheet M0283-7HL, 2nd edition,
April 1968, Scale 1:200,000 (SECRET - [redacted])

25X1
25X1

15th RTS. US Air Target Chart, Series 200, Sheet M0283-12HL, 3rd edition,
December 1964, Scale 1:200,000 (SECRET - [redacted])

25X1
25X1

Documents

1. CIA. PIR 75011, Oil Field and Refinery Complex, Sa-erh-tu, China,
July 1966, [redacted] (TOP SECRET [redacted])

225X1

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25X1

TOP SECRET RUFF

25X1

25X1

B. Kuang-jao Oil Field

25X1

Map

15th RTS. US Air Target Chart, Series 200, Sheet M0381-17HL, 2nd edition,
February 1966, Scale 1:200,000 (SECRET [redacted])

25X1

25X1

Documents

1. CIA. SID Memorandum 282/67, Kuang-jao (Sheng-li) Oilfield, China,
17 November 1967, [redacted] (TOP SECRET RUFF)

25X1

C. Ko-la-ma-i Oil Field

25X1

TOP SECRET RUFF

25X1

TOP SECRET RUFF

25X1
25X1

C. Ko-la-ma-i Oil Field (Continued)

Map

AMS. Ko-la-ma-i, China, Series 1505, Sheet NL 45-7, 1st edition, 1967,
Scale 1:250,000 (SECRET - [REDACTED])

25X1
25X1

Documents

I. CIA. IAR 85024, Karamai Oilfield and Refineries, China,
October 1967, [REDACTED] (TOP SECRET RUFF)

25X1

D. Yu-chuan-tzu Oil Field

25X1

Map

AMS. Tsaidam, China, Series 1301, Sheet NJ-46, 2nd edition, August
1964, Scale 1:1,000,000 (UNCLASSIFIED)

Document

I. CIA. IB Memorandum - 52/64, Leng-hu, Oilfield and Refinery, China;
Yu-sha-shan, Oilfield and Refinery, China; Yu-chuan Tzu,
Oilfield and Refinery, China, 27 January 1964, [REDACTED]
(TOP SECRET RUFF)

25X1

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25X1

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25X1

E. Yu-sha-shan Oil Field

25X1

Map

AMS. Tsaidam, China, Series 1301, Sheet NJ-46, 2nd edition, August 1964,
Scale 1:1,000,000 (UNCLASSIFIED)

Document

1. CIA. IB Memorandum 52/64, Leng-hu, Oilfield and Refinery, China;
Yu-sha-shan, Oilfield and Refinery, China; Yu-chuan Tzu,
Oilfield and Refinery, China, 27 January 1964,
(TOP SECRET RUFF)

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Requirement

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